F.BF.B.3: Graphing Polynomial Functions 2
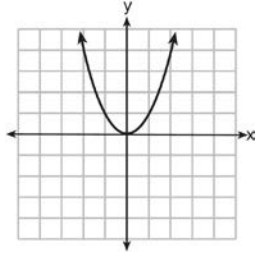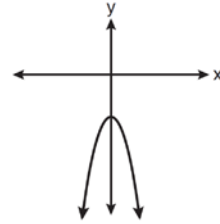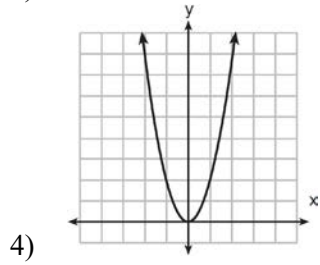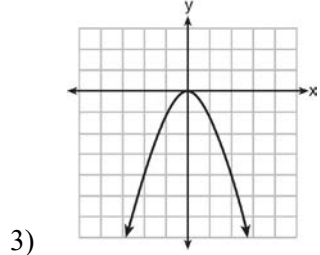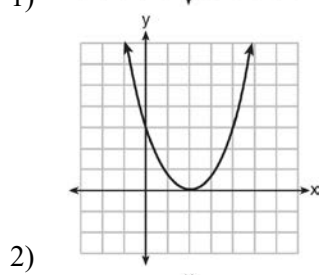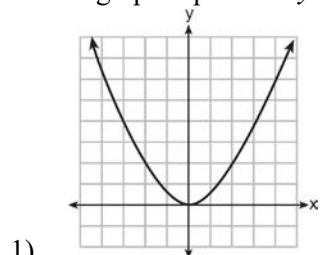
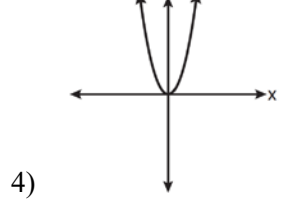1   The graph of $y = x^2$ is shown below.

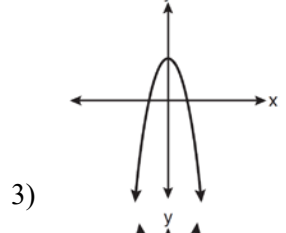Which graph represents $y = 2x^2$?

1)
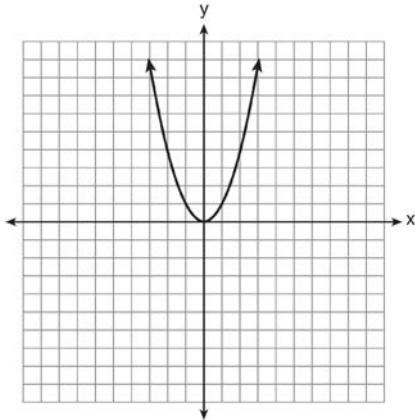
2)

3)

4)

2   The diagram below shows the graph of $y = -x^2 - c$.

Which diagram shows the graph of $y = x^2 - c$?

1)

2)

3)

4)
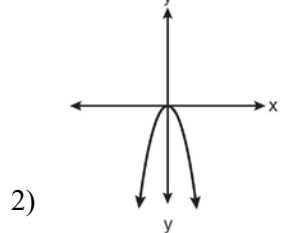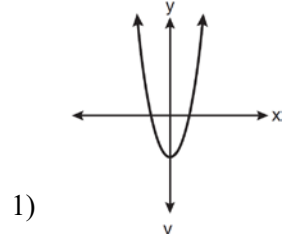
3   The graph of the equation $y = x^2$ is shown below.

Which statement best describes the change in this graph when the coefficient of x^2 is multiplied by 4?
1)   The parabola becomes wider.
2)   The parabola becomes narrower.
3)   The parabola will shift up four units.
4)   The parabola will shift right four units.

4   What is the translation that maps the function $f(x) = x^2 - 1$ onto the function $g(x) = x^2 + 1$?
1) $T_{0,2}$
2) $T_{0,1}$
3) $T_{1,-1}$
4) $T_{-1,1}$

5   The graph of $y = (x - 3)^2$ is shifted left 4 units and down 2 units. What is the axis of symmetry of the transformed graph?
1) $x = -2$
2) $x = -1$
3) $x = 1$
4) $x = 7$

6   Which is the equation of a parabola that has the same vertex as the parabola represented by $y = x^2$, but is wider?
1) $y = x^2 + 2$
2) $y = x^2 - 2$
3) $y = 2x^2$
4) $y = \frac{1}{2}x^2$

7   The graph of a parabola is represented by the equation $y = ax^2$ where a is a positive integer. If a is multiplied by 2, the new parabola will become
1)   narrower and open downward
2)   narrower and open upward
3)   wider and open downward
4)   wider and open upward

8   Melissa graphed the equation $y = x^2$ and Dave graphed the equation $y = -3x^2$ on the same coordinate grid. What is the relationship between the graphs that Melissa and Dave drew?
1)   Dave's graph is wider and opens in the opposite direction from Melissa's graph.
2)   Dave's graph is narrower and opens in the opposite direction from Melissa's graph.
3)   Dave's graph is wider and is three units below Melissa's graph.
4)   Dave's graph is narrower and is three units to the left of Melissa's graph.

9   Consider the graph of the equation $y = ax^2 + bx + c$, when $a \neq 0$. If a is multiplied by 3, what is true of the graph of the resulting parabola?
1)   The vertex is 3 units above the vertex of the original parabola.
2)   The new parabola is 3 units to the right of the original parabola.
3)   The new parabola is wider than the original parabola.
4)   The new parabola is narrower than the original parabola.

10   How is the graph of $y = x^2 + 4x + 3$ affected when the coefficient of x^2 is changed to a smaller positive number?
1)   The graph becomes wider, and the y-intercept changes.
2)   The graph becomes wider, and the y-intercept stays the same.
3)   The graph becomes narrower, and the y-intercept changes.
4)   The graph becomes narrower, and the y-intercept stays the same.

F.BF.B.3: Graphing Polynomial Functions 2
Answer Section

1   ANS: 4   REF: 061503ia
2   ANS: 1   REF: 081015ia
3   ANS: 2   REF: 081414ia
4   ANS: 1   REF: 010906b
5   ANS: 2

$y = (x - 3)^2$ is in vertex form, so the vertex of this quadratic is (3, 0), and the axis of symmetry is $x = 3$. Shifting the graph left 4 units moves the axis of symmetry to $x = -1$.

REF: 060611b
6   ANS: 4   REF: 081322ia
7   ANS: 2   REF: 081218ia
8   ANS: 2   REF: 061113ia
9   ANS: 4   REF: 060829ia
10 ANS: 2   REF: 011330ia